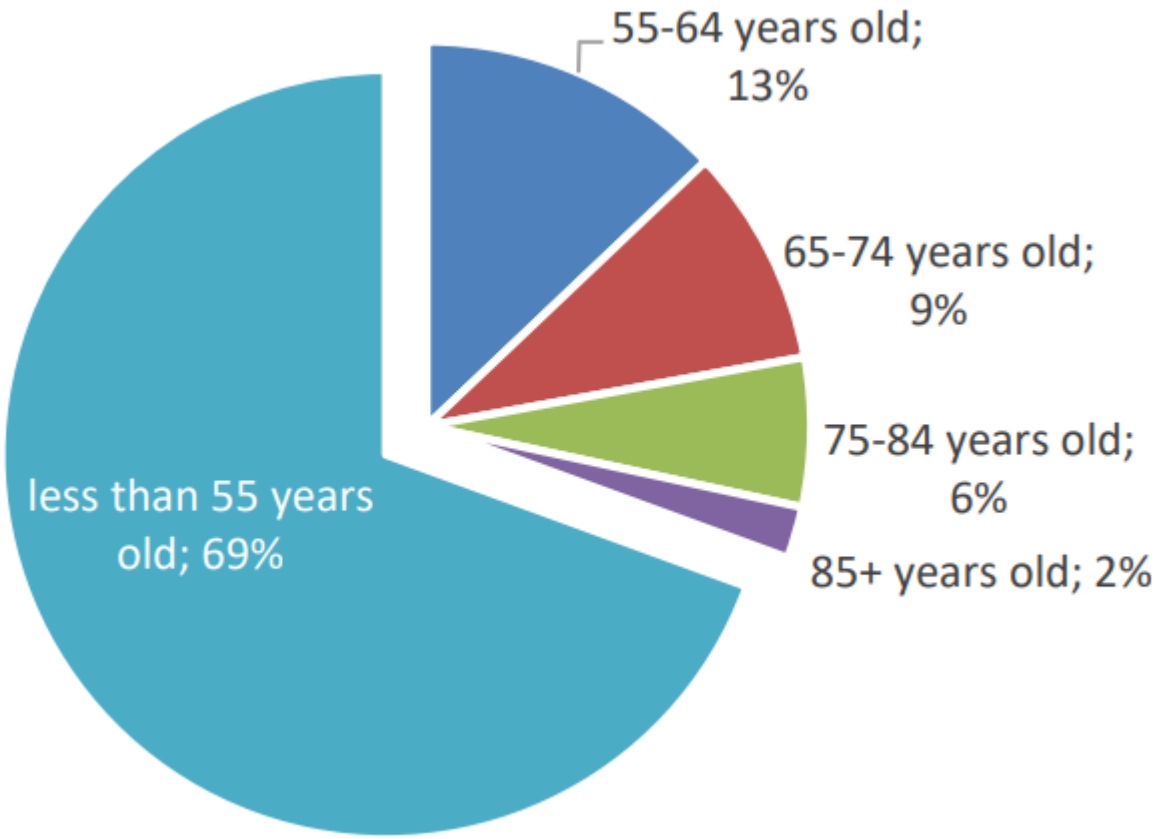
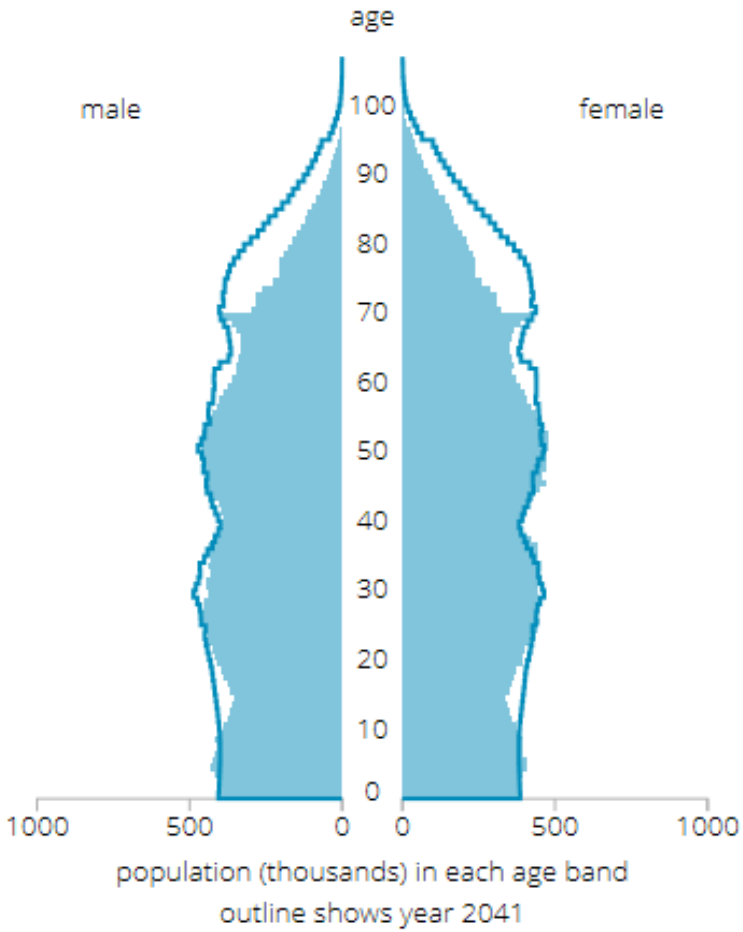
INCluSilver

Helen Griffiths, University of Surrey

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 731349-INCluSilver

The European and UK demographic





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Frailty score predicts survival

Defining frailty

- Slow mobility
- Weakness
- Weight loss
- Decreased activity
- Exhaustion

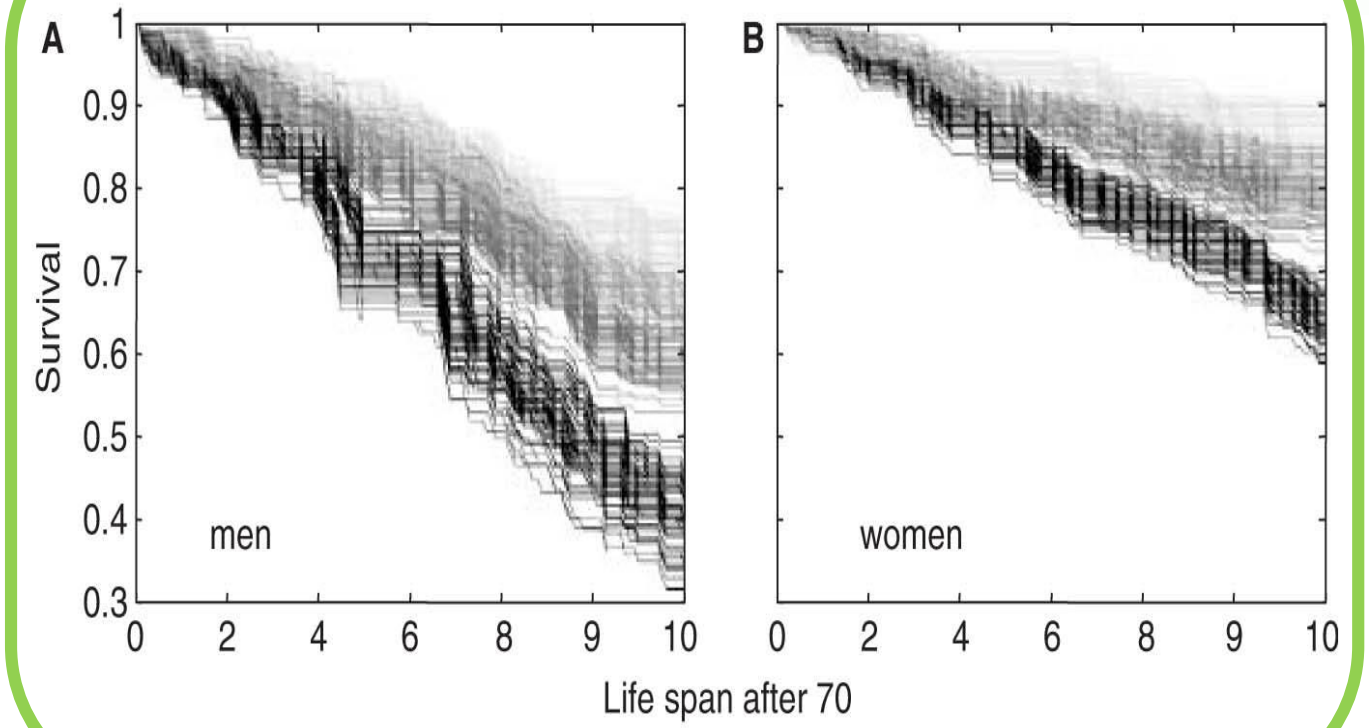
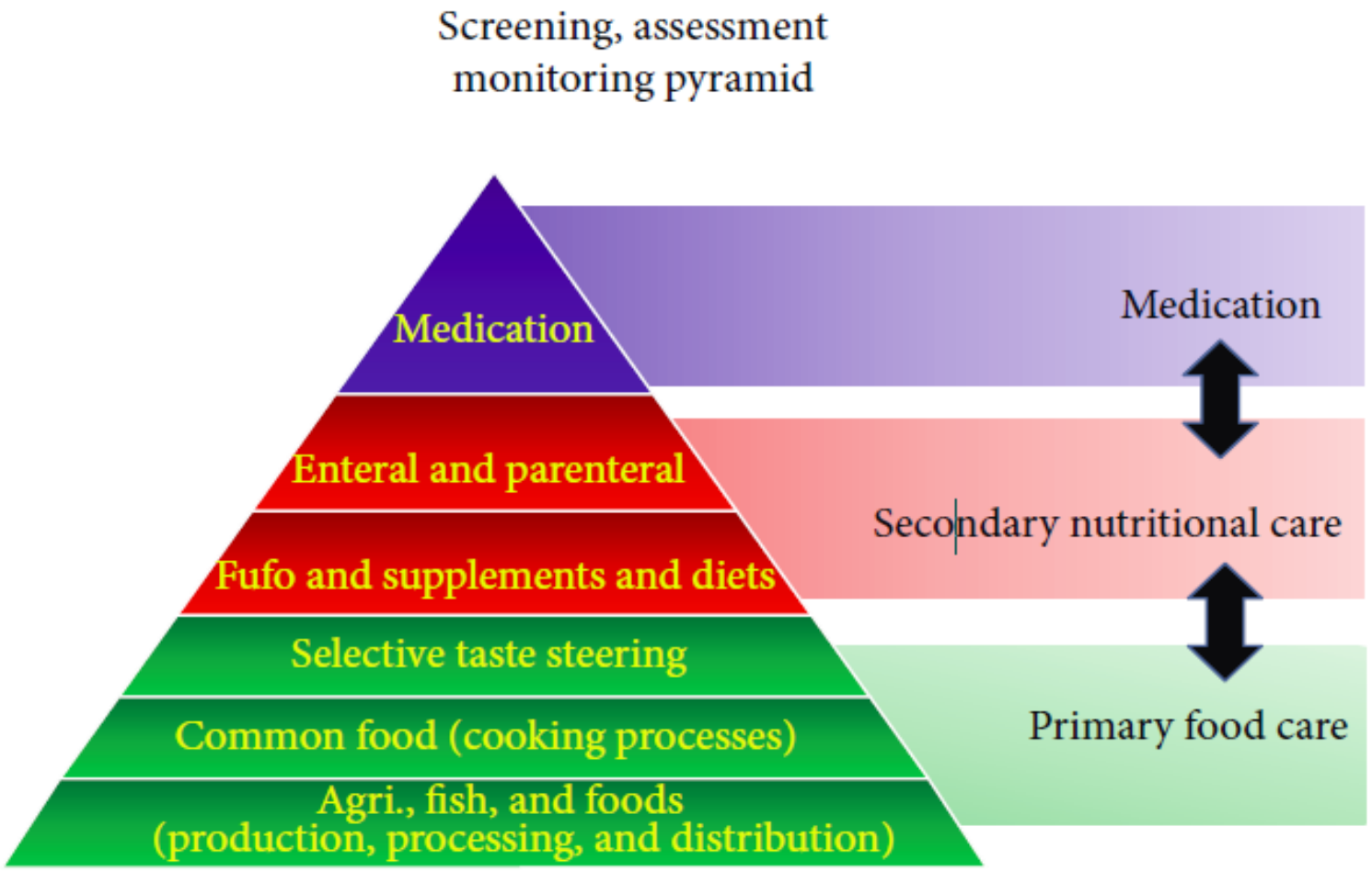


Figure from Rockwood et al., JAGS. 2006, 54 (6) 975-979

Black to light grey = high to lower frailty profile score

NutriLive: to Prevent Malnutrition in Older People and Promote Active and Healthy Ageing—The EIP-AHA Nutrition Action Group



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Food and Nutrition for Health

Fifty years of distinguished teaching and research in food and nutrition – benefiting public health and educating future practitioners

2017-19

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Research-informed nutrition for older adults

Vitamin C supplementation

- Lowers protein oxidation in healthy volunteers (2002)
- Alters monocyte surface antigens and adhesion to endothelial cells (2002, 2003)
- Lowers rbc membrane protein oxidation in dialysis (2015)

Vitamin E in healthy volunteers

- Elevates plasma apolipoprotein A1 (2006)
- Almond enriched diet increases vitamin E and improves vascular function in older adults (2014)

metabolism and ageing

- In the elderly, a higher daily intake of fruits and vegetables is associated with an improved antioxidant status (2005)
- Age associated changes in long chain fatty acids favour inflammation (2016)

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Osteoporosis International
https://doi.org/10.1007/s00198-019-04933-8

REVIEW ARTICLE

Dietary protein and bone health across the life-course: an updated systematic review and meta-analysis over 40 years

A. L. Darling[1] · R. J. F. Manders[1] · S. Sahni[2,3] · K. Zhu[4,5] · C. E. Hewitt[6] · R. L. Prince[4,5] · D. J. Millward[1] · S. A. Lanham-New[1]

Received: 27 October 2018 / Accepted: 4 March 2019

Abstract

We undertook a systematic review and meta-analysis of published papers assessing dietary protein and bone health. We found little benefit of increasing protein intake for bone health in healthy adults but no indication of any detrimental effect, at least within the protein intakes of the populations studied. This systematic review and meta-analysis analysed the relationship between dietary protein and bone health across the life-course. The PubMed database was searched for all relevant human studies from the 1st January 1976 to 22nd January 2016, including all bone outcomes except calcium metabolism. The searches identified 127 papers for inclusion, including 74 correlational studies, 23 fracture or osteoporosis risk studies and 30 supplementation trials. Protein intake accounted for 0–4% of areal BMC and areal BMD variance in adults and 0–14% of areal BMC variance in children and adolescents. However, when confounder adjusted (5 studies) adult lumbar spine and femoral neck BMD associations were

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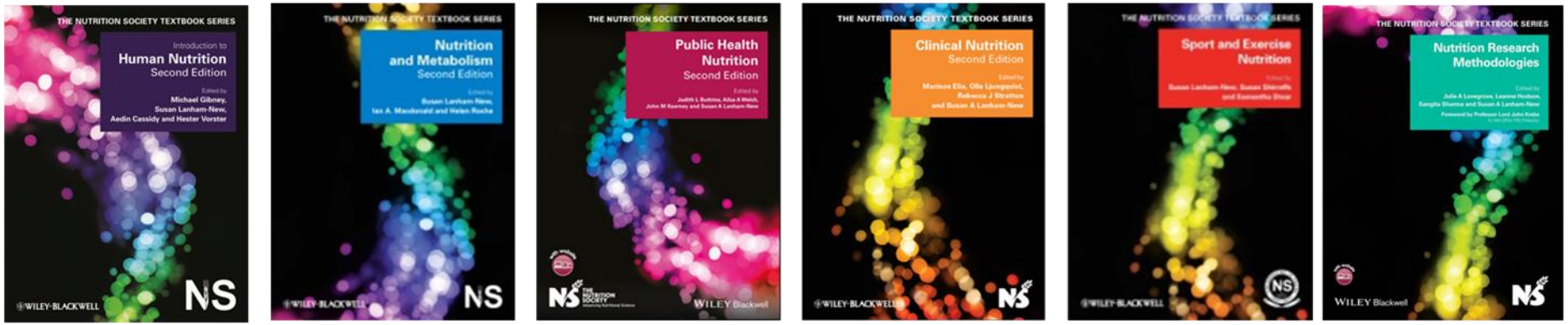
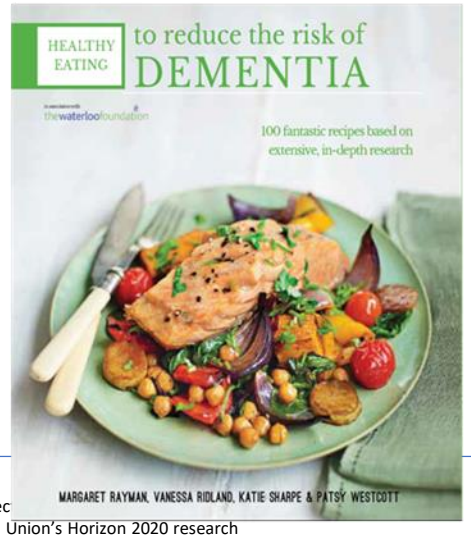
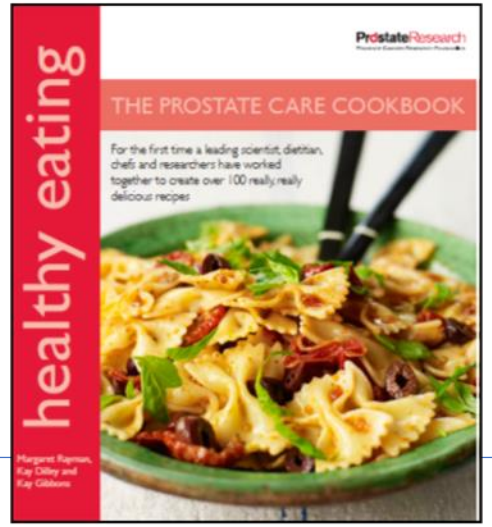
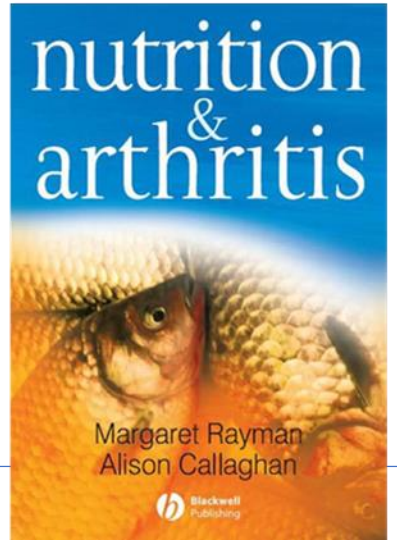


- Introduction to Human Nutrition (2 edn.)
- Nutrition and Metabolism (2 edn.)
- Public Health Nutrition (2 edn.)
- Clinical Nutrition (2 edn.)
- Sport and Exercise Nutrition (1 edn.)
- Nutrition Research Methodology (1 edn)







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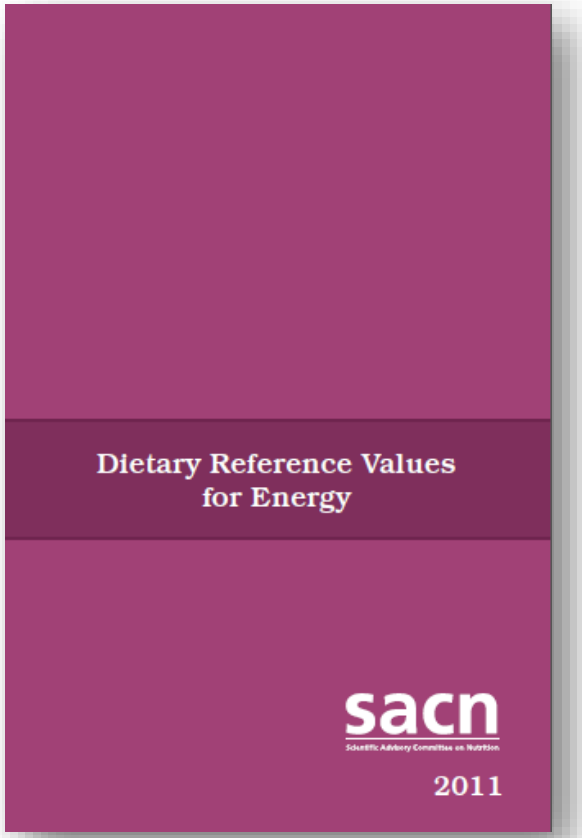
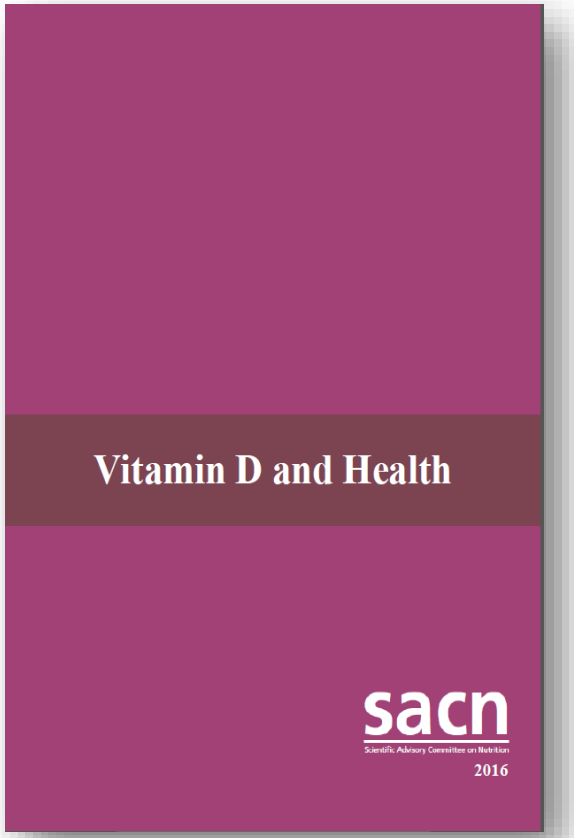
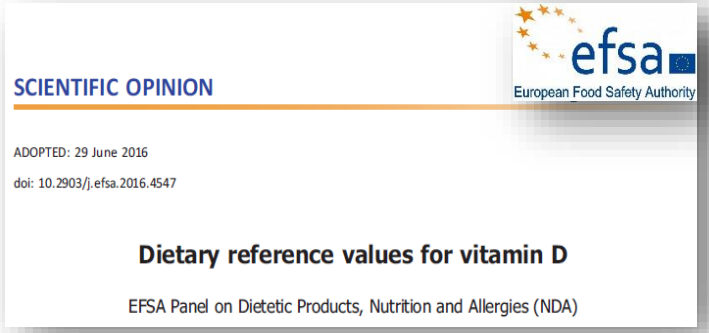
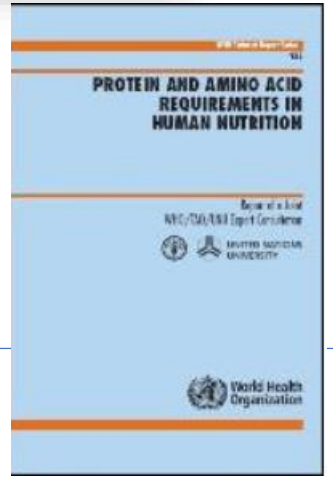






World Health Organization

Food and Agriculture Organization of the United Nations



UNIVERSITY OF SURREY

SHARP: Surrey Healthy Ageing Research Partnership

Are you interested in why old individuals are more prone to illness, or how we can prevent or reduce illness in older adults?

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 731349-INCluSilver

Vitamin D – Public health policy UK

Age group	DRI NEW (Institute of Medicine, 2010)	RNI (Department of Health, 1991)
0-6 months	15 µg (600 IU)	8.5 µg (340 IU)
7 mo - 3 y	15 µg (600 IU)	7 µg (280 IU)
4 - 50 years	15 µg (600 IU)	0 µg
51 - 64 years	15 µg (600 IU)	0 µg
65 – 70 years	20 µg (800 IU)	10 µg (400 IU)
71 + years	25 µg (1000 IU)	10 µg (400 IU)

New vitamin D requirements will be 10 µg/ 400IU per day

This represents a significant challenge to the UK population since we would achieve no more than 3.5 µg/ 140IU per day

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Does the EU population meet the DRI for different nutrients?

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Adult nutrient intakes across Europe

Macronutrient RNI achievement is poorer than micronutrient RNI

RNI achievement is lowest in female elderly

nutrients

MDPI

Review

Adult Nutrient Intakes from Current National Dietary Surveys of European Populations

Received: 13 October 2017; Accepted: 22 November 2017; Published: 27 November 2017

Holly L. Rippin [1,*], Jayne Hutchinson [1], Jo Jewell [2], Joao J. Breda [2] and Janet E. Cade [1]

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2 Division of Noncommunicable Diseases and Promoting Health through the Life-Course, World Health Organization Regional Office for Europe, UN City, Marmorvej 51, DK-2100 Copenhagen, Denmark; jewellj@who.int (J.J.); rodriguesdasilvabred@who.int (J.J.B.)

Protein requirements for older adults?

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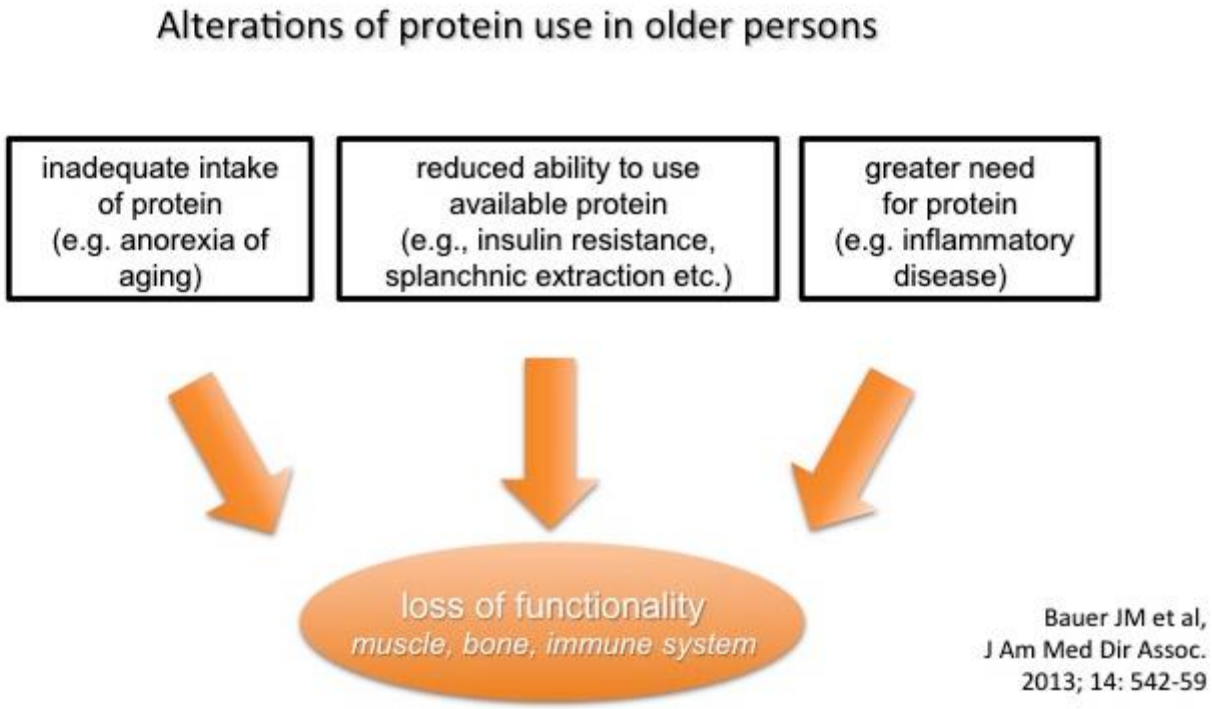
Muscle mass - PROT-AGE recommendations for dietary protein intake in *healthy* older adults



Bauer JM et al,
J Am Med Dir Assoc.
2013; 14: 542-59

- To maintain and regain muscle, older people need more dietary protein than do younger people; older people should consume an average daily intake in the range of 1.0 to 1.2 g/kg BW/d
- The per-meal anabolic threshold of dietary protein/amino acid intake is higher in older individuals (ie, 25 to 30 g protein per meal, containing about 2.5 to 2.8 g leucine) in comparison with young adults.
- Protein source, timing of intake, and amino acid supplementation may be considered when making recommendations for dietary protein intake by older adults.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 731349-INCluSilver

The association between diet and survival – the EPIC study

- 76,707 men and women aged 60+
- No CHD, stroke or cancer at enrolment
- Median follow up 89 months (4047 deaths)
- Adherence to Mediterranean diet assessed on 10-point scale:
- 0 (poor)…9 (high)

- A 2 unit increment in ‘Mediterranean-ness’ of diet results in 8% reduction of overall mortality

Trichopoulou A *et al.* (2005) *BMJ* **330**, 991

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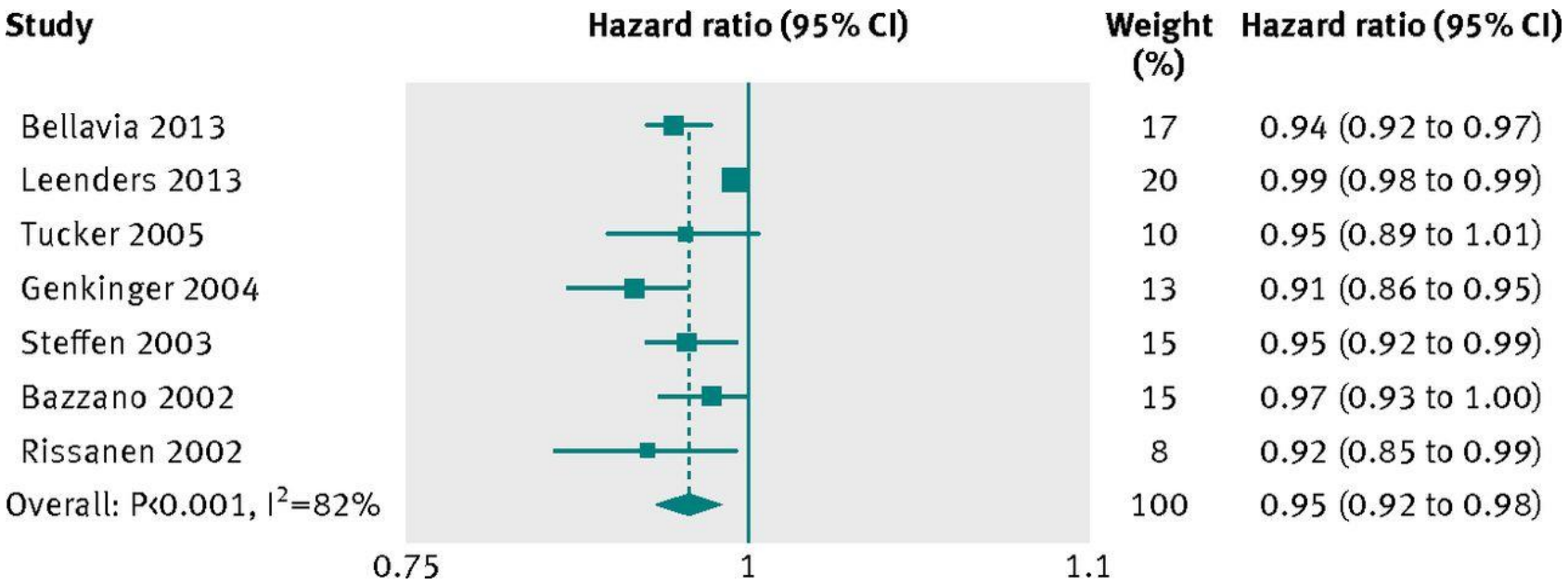
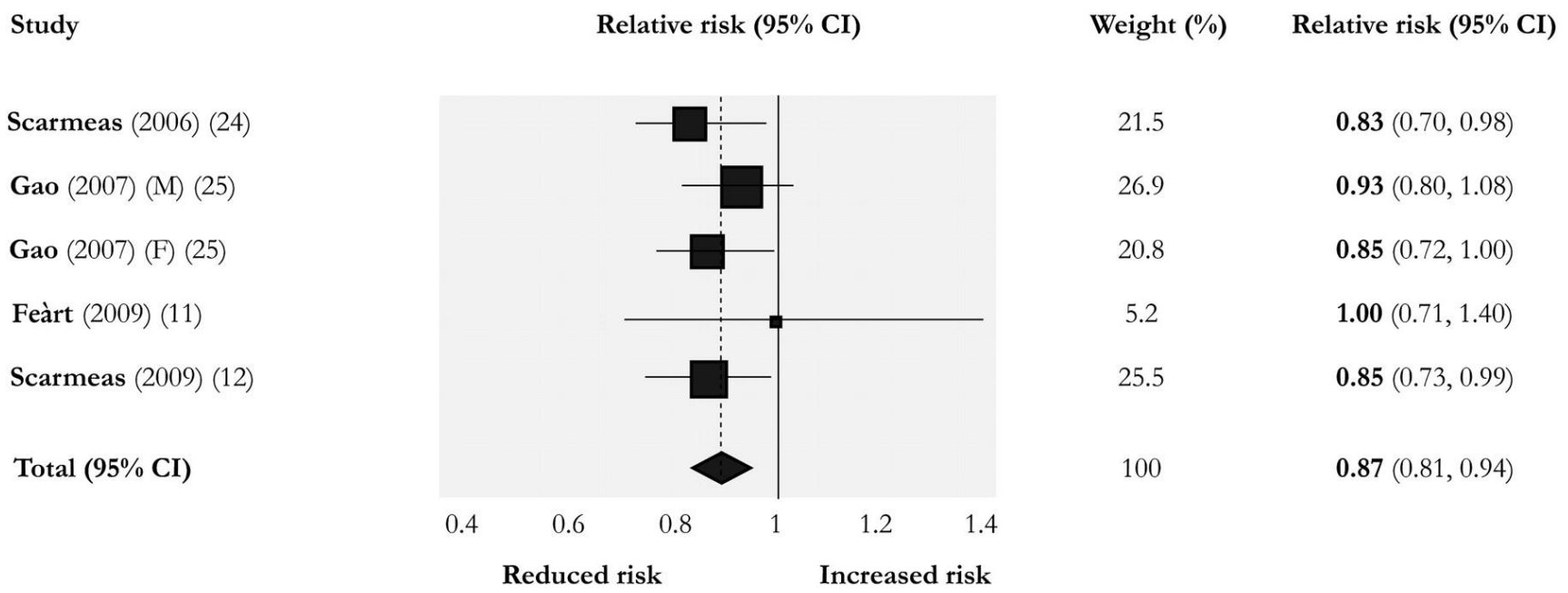
Fruit and vegetable intake associates with lower, later mortality risk



Sixteen prospective cohort studies were eligible in this meta-analysis - with follow-up periods from 4.6 to 26 years there were 56 423 deaths among 833 234 participants.

thebmj 2014;349:g4490

Adherence to Mediterranean diet associated with ↓ risk of neurodegenerative disease



- Sofi F et al (2010) Am J Clin Nutr 9 2, 1189

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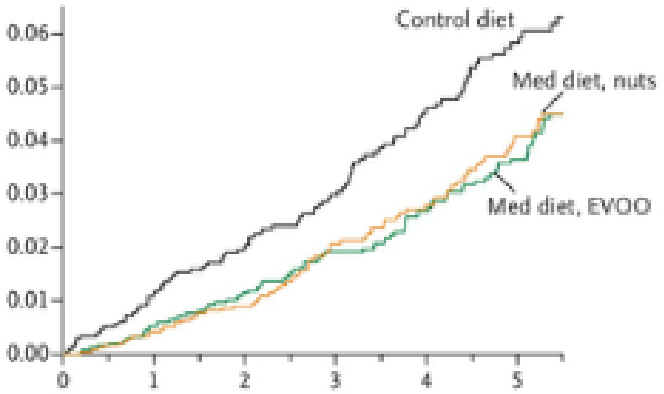
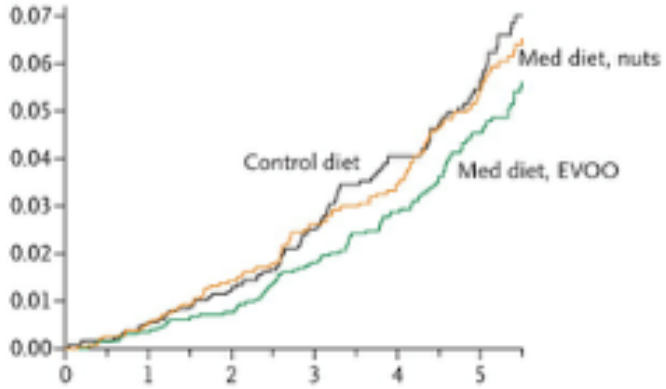
Prevention - Dietary intervention – Predimed – reduces mortality in older adults

CV outcomes

Kaplan–Meier Estimates of the Incidence of Outcome Events in the Total Study Population



All cause



The NEW ENGLAND JOURNAL of MEDICINE

Estruch et al, 2013, 368, 1279-90

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InCluSilver Systematic Review of Nutrient benefits in older adults

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– European Personalised Nutrition Strategy –

Helen Griffiths, Monique Raats,
Dominick Burton, Chloe Wilmot

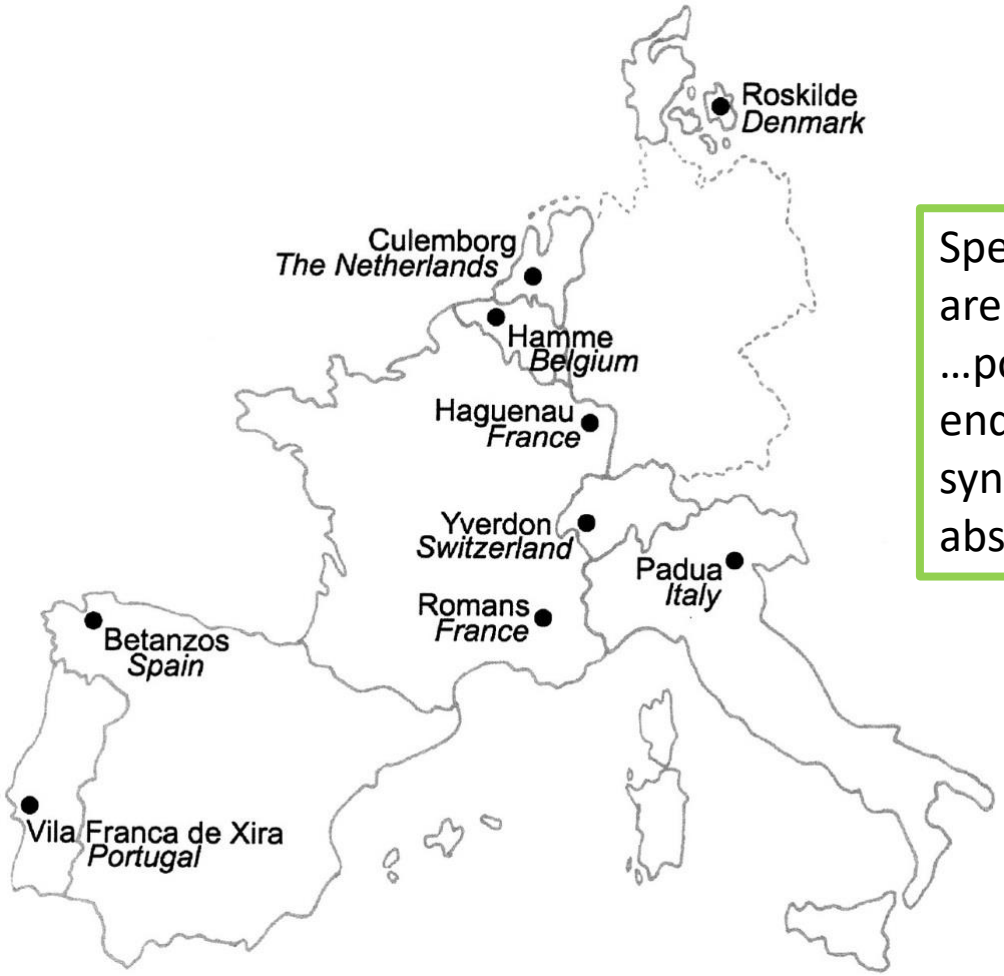
University of Surrey

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 731349-INCluSilver

https://www.inclusilver.eu/wp-content/uploads/2017/09/INCluSilver-European-Personalised-Nutrition-Strategy-1.pdf

Micronutrient - Survey in Europe on Nutrition and the Elderly: a Concerted Action (SENECA) study

Vitamin B12 and vitamin D deficiencies are prevalent in the older adults



Specific nutrients are of concern, …poor endogenous synthesis and/or absorption.

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Lisette C. P. M. G. de Groot et al. J Gerontol A Biol Sci Med Sci 2004;59:1277-1284

the Journals of gerontology Series a

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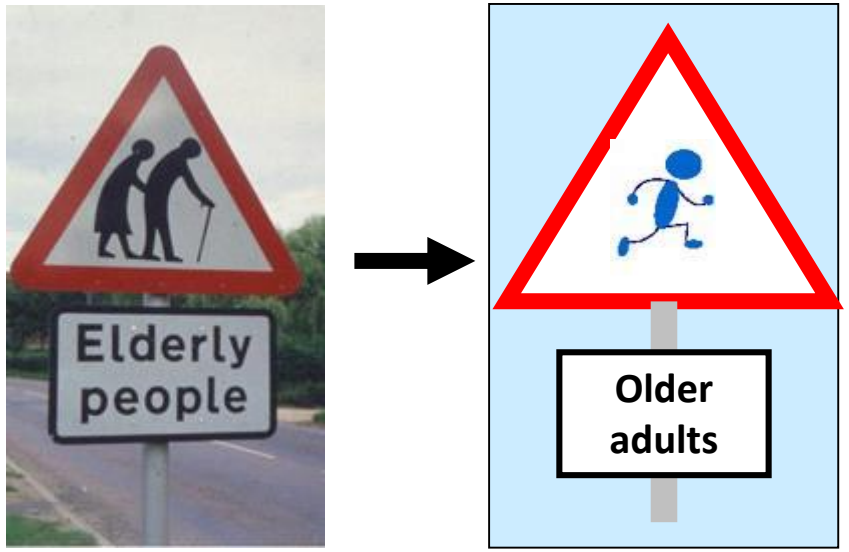
In general terms, there is evidence in older adults that

there are health benefits associated with increasing

- Unsaturated fatty acids
- Leucine rich protein
- “Mediterranean extract”
- Energy low, nutrient dense
- Low GI, high-fibre carbohydrate



In future, at a personalised level

- Micronutrients

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Approaches to support improved nutrition in older adults

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 731349-INCluSilver

InCluSilver Strategy

- Design and implement systems that enable monitoring of nutritional health status in older adults
- Develop new foods that meet the nutritional, taste and mastication requirements for healthy older adults in health and those with chronic conditions associated with older age
- Use knowledge of silver consumer behaviour to support the uptake of personalised nutrition by older adults
- Develop meal packaging and preparation approaches that can be physically managed by older adults
- The adaptation and development of personal monitoring devices for reporting on the effect of meals on health indices
- Design and implementation of mobile apps that offer coaching on diet based on user-friendly but highly detailed data.

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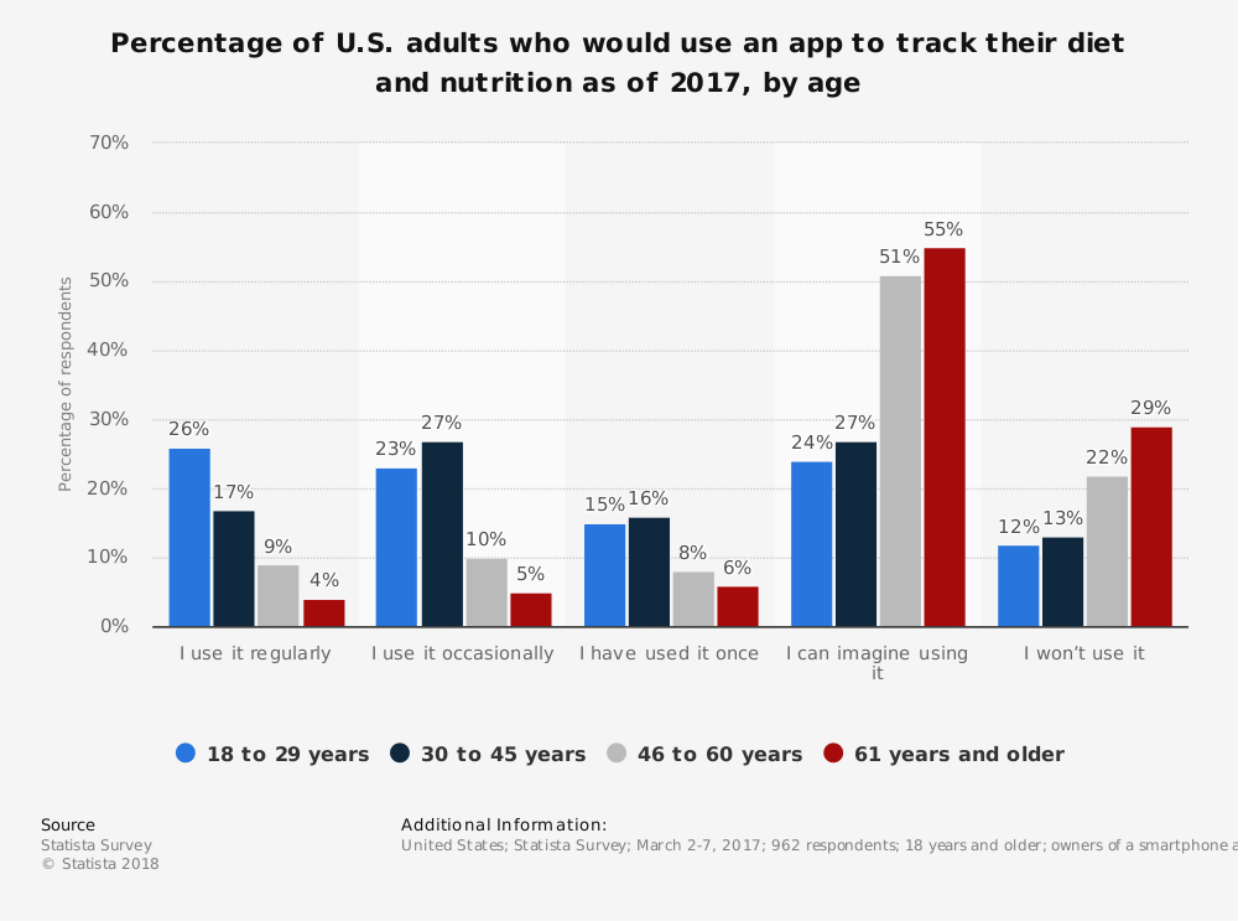
Personal IT usage by age to monitor diet



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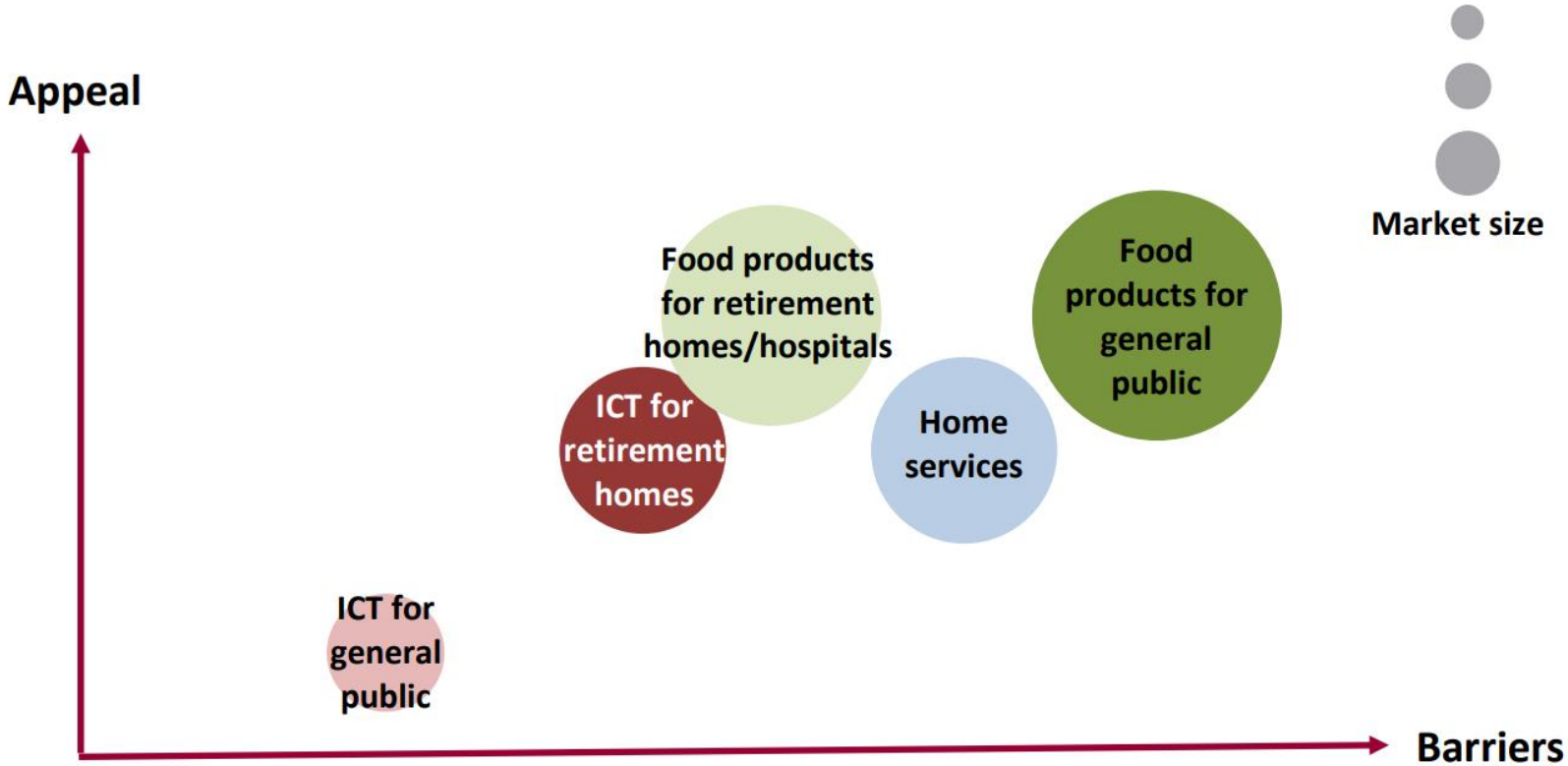
Priority matrix of market segments



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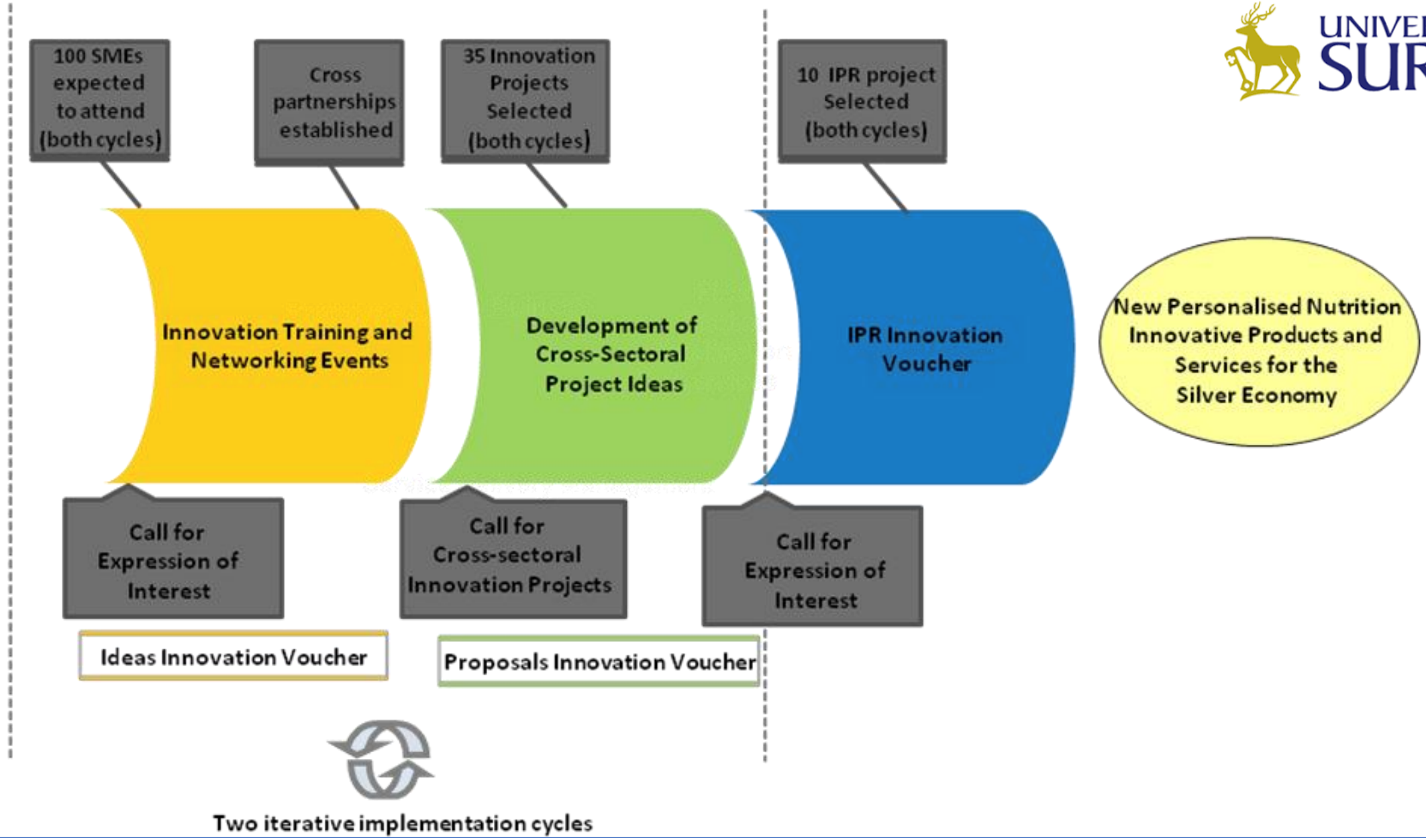

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The partners

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Skåne Food Innovation Network

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DAREPUGLIA! Distretto Tecnologico Agroalimentare

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